

Notice of Allowability

Application No.

10/816,153

Examiner

Ling-Siu Choi

Applicant(s)

UCKERT ET AL.

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to October 13, 2006.
2. ☒ The allowed claim(s) is/are 20-32.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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DETAILED ACTION

1. This Office Action is in response to the Amendment filed October 13, 2006. Claims 21-32 have been added and claims 20-32 are now pending.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. John H. Lamming on November 20, 2006.

3. The application has been amended as follows:

page 1, between the title and the subtitle of Field of the Invention, insert the following paragraph:

--Related U.S. Application Data

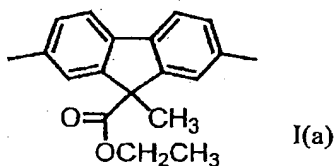
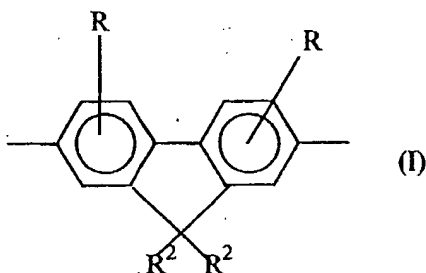
This application is a divisional of Application Serial No. 10/139,032, filed May 3, 2002, now US Patent No. 7,074,886, which claims benefit of 60/289,333, filed May 7, 2001.--;

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Amend claim 20 as following:

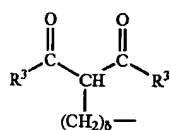
20. (currently amended) A process for preparing fluorene polymers having perfluoroalkyl groups, the steps comprising:

(A) forming a polymer having at least one monomeric unit having a Formula I or a polymer having at least one monomeric unit having a Formula I and monomeric unit having a Formula I(a):



where:

R is a substituent on a carbon atom in an aromatic ring, which can be the same or different at each occurrence and is selected from hydrogen, alkyl, aryl, heteroalkyl, heteroaryl, F, -CN, -OR¹, -CO₂R¹, -C_ψH_θF_λ, -OC_ψH_θF_λ, -SR¹, -N(R¹)₂, -P(R¹)₂, -SOR¹, -SO₂R¹, -NO₂, and beta-dicarbonyls having Formula XII:



or adjacent R groups together can form a ring selected from 5-membered cycloalkyl, 6-membered cycloalkyl, 5-membered aryl, 6-membered aryl, 5-membered

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heteroaryl and 6-membered heteroaryl, such that

R^1 is a substituent on a heteroatom which can be the same or different at each

occurrence and is selected from alkyl, aryl, heteroalkyl and heteroaryl; and

ψ is an integer between 1 and 20, and θ and λ are integers satisfying Equation A1

below:

$$\theta + \lambda = 2\psi + 1; \quad (\text{Equation A1});$$

R^2 is a substituent on a carbon atom not in an aromatic ring, which can be the same or

different at each occurrence and is selected from hydrogen, alkyl, aryl, heteroalkyl,

heteroaryl and $-C_\psi H_\theta F_\lambda$,

R^3 is hydrogen, alkyl, aryl, heteroalkyl and heteroaryl;

δ is 0 or an integer from 1 to 12; and

(B) treating the polymer with a perfluoroalkylating reagent selected from (i) a perfluoroalkyl iodide and (ii) a perfluoroalkylsulfonyl chloride in the presence of a ruthenium(II) catalyst;

with the proviso that, after treating the polymer with the perfluoroalkylating reagent, the polymer contains at least one R substituent with the formula $-C_\psi H_\theta F_\lambda$.

Allowable Subject Matter

4. Claims 20-32 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Pei et al. (US

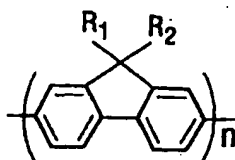
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5,900,327).

Summary of Claim 20:

A process to prepare fluorene polymer having perfluoroalkyl groups, comprising	
A	forming a polymer having at least one monomeric unit having a Formula I or a polymer having at least one monomeric unit having a Formula I and monomeric unit having a Formula I(a)
B	treating the polymer with a perfluoroalkylating reagent selected from (i) a perfluoroalkyl iodide and (ii) a perfluoroalkylsulfonyl chloride in the presence of a ruthenium (II) catalyst
with the proviso that, after treating the polymer with the perfluoroalkylating reagent, the polymer contains <u>at least one R substituent with the formula $-C_{\psi}F_{2\psi+1}$</u>	

Pei et al. disclose a process to prepare a polymer represented in the general formula of Fig. 1C



wherein R_1 is an aliphatic group which includes at least 1 heteroatom-containing polar group, wherein " R_1 typically contains at least about 1 carbon in its aliphatic portion and especially from 1 to 30 carbon atoms" and the polar group comprising ester group and R_2 is an alkyl group containing from about 1 to about 15 carbons (col. 4, lines 30-48;

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col. 5, lines 7-10; claim 1). However, Pei et al. do not teach or fairly suggest a process to prepare the claimed polymer having at least one substituent (R) being $-C_{\psi}F_{2\psi+1}$.

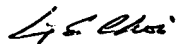
In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114.


LING-SUI CHOI
PRIMARY EXAMINER

November 25, 2006